

quantities of timber have been destroyed, and the atmosphere filled with dense smoke. These fires have been burning for the last three months.

Poway, San Diego county, California.—Brush fires prevailed in this vicinity from the 21st to the 24th.

Less extensive prairie and forest fires have occurred during the month as follows:

Dayton, Washington Territory.—1st, 22d, 23d, 28th.

Fort Maginnis, Montana.—6th, 23d to 26th.

Los Angeles, California.—24th, 25th.

Deadwood, Dakota.—26th.

Fort Totten, Dakota.—26th.

Fort Smith, Arkansas.—27th.

Fort Bennett, Dakota.—29th.

#### POLAR BANDS.

Lead Hill, Arkansas, 1st, 6th, 10th, 11th, 13th, 25th, 26th.

Alexandria, Dakota, 16th, 24th.

Archer, Florida, 14th, 17th, 21st, 23d, 25th, 27th, 29th.

Riley, Illinois, 27th.

Wabash, Indiana, 10th.

Yates Centre, Kansas, 9th.

Salina, Kansas, 18th, 23d.

Gardiner, Maine, 11th, 13th, 28th.

Freehold, New Jersey, 10th.

Vineland, New Jersey, 8th, 14th, 17th, 20th.

Portsmouth, North Carolina, 7th, 15th.

Wauseon, Ohio, 28th.

Nashville, Tennessee, 12th, 13th.

Palestine, Texas, 18th, 23d, 24th.

Woodstock, Vermont, 4th, 20th.

The following extract is taken from a communication from Dr. James C. Neal, of Archer, Florida:

I see in Florida, almost constantly, that if polar bands occur in the upper strata, the surface wind blows at a right angle to the bands, i. e., if the axis of the polar bands lies north and south, the wind is east to west or west to east, and in ten or fifteen hours thereafter, the surface wind coincides with the axis of the polar band. If the upper strata of clouds move at a right angle to the lower, in from eight to twelve hours afterward, the surface wind changes to the direction of the upper clouds.

#### MIGRATION OF BIRDS.

*Geese flying southward.*—Sacramento, California, 1st; Keokuk, Iowa, 4th; Wauseon, Ohio, 8th; Indianola, Texas, 19th, 21st; Alexandria, Dakota, 20th, 22d; Narragansett Pier, Rhode Island, 22d; Wentworth, Dakota, 26th, 28th; Traverse City, Michigan, 29th; Morriston, Dakota, 29th; Ithaca, New York, 30th.

*Flying northward.*—Marquette, Nebraska, 24th.

*Ducks flying southward.*—Red Bluff, California, 14th.

*Flying northward.*—Des Moines, Iowa, 25th.

#### WATER-SPOUTS.

Captain H. S. Quick, of the s. s. "New York," reported on the afternoon of September 8th, near N. 31° 45', W. 80°: "Two water-spouts formed near the ship and were very near together—had to haul the ship northeast to clear them. They travelled from east to west."

Captain Salter, of the ship "Marlborough," reported on September 14th, in latitude 43° 32' N., longitude 38° W.: "Passed between two water-spouts, which were within a stone's throw of the vessel."

#### ZODIACAL LIGHT.

Pensacola, Florida, 20th.

Cambridge, Massachusetts, 11th.

Nashville, Tennessee, 1st, 2d, 4th, 6th, 7th, 8th, 10th to 15th.

Palestine, Texas, 21st, 22d, 24th, 25th.

#### SAND STORMS.

Yuma, Arizona, 7th, 21st, 30th.

Fort Garland, Colorado, 5th.

Huron, Dakota, 20th.

San Carlos, Arizona, 18th, 21st, 22d.

#### NOTES AND EXTRACTS.

The following meteorological summary has been forwarded by Mr. W. H. Ragan, Lafayette, Indiana, Director of the "Weather Service" of that state:

September, 1882, was chiefly noted for its low mean temperature. The records of this office show the monthly mean temperature of September, 1880, to have been 63° 89; of September, 1881, 70° 82; of September, 1882, 63° 01; and of September, 1883, 61° 22. This is 3° 53 below the average for the four years named, and 4° 71 lower than the average of the three years immediately preceding.

The average September rainfall for the years named is 2.10 inches, while that of September, 1883, is 1.64.

Frosts occurred on the 6th, 10th, and 26th; that of the 10th greatly damaged the late corn and other tender vegetation.

The highest barometer, 30.51, occurred on the 9th; the lowest, 29.74, on the 24th.

The highest temperature, 87°, occurred on the 15th; the lowest, 32°, occurred on the 26th.

The prevailing wind for the month was from the northeast, thirty-five observations out of the ninety showing the wind from this source.

From the reports of thirty-one local observers reporting to this office, the following summary is made:

Average maximum barometer, 29.95; average minimum barometer, 29.29; average mean barometer, 29.78; maximum barometer, 30.51, is reported from Tippecanoe county; minimum barometer, 28.66, is reported from Henry county; highest mean barometer, 30.47, from Tippecanoe county; lowest mean barometer, 28.96, from Henry county; greatest daily range of barometer, 0.90, from Hamilton county; least daily range, 0.09, from Switzerland county.

Average maximum temperature, 87° 12; average minimum temperature, 42° 06; average mean temperature, 63° 58; maximum temperature, 93°, reported from Spencer county; minimum temperature, 32°, from Tippecanoe county; maximum monthly range of temperature, 58°, reported from Vermillion county; minimum monthly range, 36°, from Hamilton county.

Greatest number of clear days, eighteen for Washington county; least number, one, for Putnam county; greatest number of rainy days, eleven, for Fayette county; least number, two each for Dubois and Washington counties.

Nineteen observers report the maximum temperature for the 15th, and twelve for the 2d. Twenty-six reported the minimum temperature on the 26th; one on the 18th; one on the 27th; one on the 10th; and two failed to report.

Greatest rainfall reported, 5.98 inches for Randolph county; smallest rainfall, 0.15 inches for Gibson county; average rainfall, 1.99 inches.

#### REPORT OF THE MISSOURI WEATHER SERVICE FOR SEPTEMBER, 1883.

The mean temperature for September has been very near the average, 69.0 degrees, and has been quite uniform and pleasant. The rainfall in and around St. Louis has been less than one-hundredth of an inch for the entire month. This has not happened before, since Engelmann began his series in 1839, although in 1871 the September rainfall was only 0.02 of an inch. Other small rainfalls have been, 1867, 0.17 inch; 1844, 0.30, and 1875, 0.33. The normal rainfall at Saint Louis is three inches. The highest September rainfall was observed in 1866, and was 10.53 inches.

Other stations reporting no rain for the past month were Saint Charles and Greenfield. In Mascoutah, Illinois, the fall was 0.03 inch. South of a line running through Clinton and Harrisonville, and passing south of Kirksville and Hannibal, the rainfall was less than an inch. The highest rainfall reported was 2.00 inches, at Pleasant Hill, and 2.15 at Oregon. The lowest temperatures reported are: Boonville, 32° 0 on the 23d; Centreville, 34° 0 on the 9th, Corning, 38° 0. The highest temperature reported was 96° 0 at Harrisonville, 94° 9 at Glasgow, 93° 0 at Warrenton and Mascoutah. Light hoar frosts, the first of the season, occurred at Macon on the 8th, and at Shelbyville, Warrenton, Mexico, Macon, Louisiana, Kirksville, Greenfield, and Corning on the morning of the 9th. Later frosts were Saint Charles, Louisiana, Mexico, Ironton, Kirksville on the 10th, Greenfield on the 18th and 23d, Carthage on the 23d, and Macon, Ironton, Corning on the 26th.

The corn crop has not been materially injured by frost except over limited areas on low ground, but it has suffered somewhat for lack of rain, which prevented the ears from filling out properly.

FRANCIS E. NIPHER, Director.

WASHINGTON UNIVERSITY, October 8, 1883.

#### WEATHER REPORT FOR SEPTEMBER, 1883.

[Prepared by Prof. F. H. Snow, of the University of Kansas, from observations taken at Lawrence.]

This month was remarkable for having a smaller rainfall, and, with one exception (1868), a lower mean temperature than any other September on our sixteen years' record. Notwithstanding the low mean temperature, the minimum temperature was 13.5 degrees above freezing point, and there was not even the lightest touch of hoar frost.

Mean temperature 63.52°, which is 2.82° below the September average. The highest temperature was 91° on the 1st; the lowest was 45.5° on the 9th, giving a range of 45.5°. The mercury reached 90° only once. Mean temperature at 7 a. m., 57.33°; at 2 p. m., 74.65°; at 9 p. m., 61.05°.

Rainfall 1.25 inches, which is 1.95 inches below the September average.

Rain fell on seven days. There was only one thunder shower. There has now been a rain deficiency for two months in succession, but the abundant precipitation of the preceding months had placed the crops beyond all danger from drouth. The entire rainfall for the nine months of 1883, now completed, has been 32.40 inches, which is 4.60 inches above the average for the same months in the preceding fifteen years.

Mean cloudiness 40.33 per cent. of the sky, the month being 0.31 per cent. clearer than usual. Number of clear days (less than one-third cloudy), fifteen; half clear (from one to two-thirds cloudy), seven; cloudy (more than two-thirds), eight. There were seven entirely clear days and one entirely cloudy. Mean cloudiness at 7 a. m., 50.67 per cent.; at 2 p. m., 44 per cent.; at 9 p. m., 26.33 per cent.

Abstract of meteorological observations for the month of September, 1883, as reported to the Bureau of Agriculture, &c., of Tennessee, by voluntary observers in co-operation with General W. B. Hazen, Chief Signal Officer, U. S. A.

County.	Station.	Latitude north.	Longitude west of Washington.	Temperature.				Wind.				Number of days—										On which rain fell, including hail, snow, and sleet.	Total rainfall, including hail, snow, and sleet (in inches).	Observers.		
				Mean of 7 a. m.	Mean of 2 p. m.	Mean of 9 p. m.	Average monthly.	Highest.	Lowest.	Date.	Prevailing direction.	Greatest force, Scale of 10.	Date.	Clear.	Fair.	Cloudy.	Auroras.	Dew.	Fog.	Frost.	Lunar halos.				Solar halos.	Hail storms.
Anderson	Andersonville	36 30	82 00	68	79	68	67	91	4	46	27	e.	br.	12	10	8	3	2	1	1	2	1	1	4	3.18	J. K. P. Wallace.
Bedford	Flat Creek	35 36	82 00	68	78	64	67	91	4	47	24	w.	br.	12	10	8	3	2	1	1	1	1	1	4	3.05	William Hart.
Blount	Maryville, 960 ft.	35 45	82 00	63	78	69	70	93	4	44	26	w.	br.	12	10	8	3	2	1	1	1	1	1	7	3.56	W. H. Henry.
Carroll	McKenzie, 515 ft.	36 10	83 03	63	78	69	70	93	4	42	24	n. w.	br. 4	28	20	5	5	4	1	1	1	1	1	2	0.34	John Brown.
Cheatham	Kingston Spgs, 500	36 10	80 44	66	80	65	67	91	14	51	10	n.	br.	11	3	3	3	3	3	3	3	3	3	1	0.98	W. J. Inman, 17 ds.
Coffee	Manchester, 1,000 ft.	35 20	9 04	66	78	63	66	90	4	51	26	n. e.	br.	4	12	15	3	3	3	3	3	3	3	5	3.56	Wiley Hickerson.
Coffee	Beech Grove, 1,050 ft.	35 30	9 00	59	76	64	66	91	4	45	26	n. e.	e.	12	9	9	2	2	1	1	1	1	7	2.06	B. F. Cheatham.	
Cumberland	Grassy Cove	36 00	82 00	63	76	58	63	91	4	41	11	n.	e.	12	11	7	21	2	1	1	1	1	5	3.35	Nettie M. Stratton.	
Crockett	Gadsden	35 45	82 00	63	77	69	66	89	2	54	24	n. w.	br.	17	9	4	2	2	1	1	1	1	2	0.27	M. T. Moore.	
Davidson	Nashville, 507 ft.	36 11	82 53	66	77	61	66	87	4	50	10	n. w.	br.	5	10	13	7	23	7	1	1	1	5	2.19	L. N. Jeunofsky.	
DeKalb	Smithville (n. r.), 700	35 50	82 40	66	77	63	71	86	4	50	10	s.	br.	13	8	6	2	1	1	1	1	1	4	1.20	P. C. Blumh, 22 days.	
Dyer	Dyersburg	36 15	82 40	66	77	61	64	87	4	40	22	n.	br.	17	14	11	5	3	3	3	3	3	3	0.63	L. Hughes.	
Franklin	Estil Springs	35 25	9 00	58	79	61	65	91	4	44	25	n.	br.	10	18	3	1	1	1	1	1	1	4	3.78	H. H. Clayton.	
Gibson	Trenton, 450 feet.	36 00	81 58	57	77	62	65	88	2	41	24	s. w.	br. 5	9	15	12	3	1	1	1	1	1	2	0.96	A. S. Curry.	
Gibson	Millan, 440 ft.	35 55	81 46	57	77	63	66	93	2	39	22	s.	br. 3	18	2	10	1	1	1	1	1	1	1	0.70	M. D. L. Jordan, M. D.	
Giles	Pulaski, 650 ft.	35 15	10 00	62	79	67	69	91	14	47	26	n.	e.	12	11	5	1	1	1	1	1	1	5	1.82	W. T. Mann.	
Greene	Greenville, 1,581 ft.	36 42	82 50	65	79	72	72	96	5	53	11	e.	1	23	7	7	2	2	2	2	2	2	2	1.24	E. Link.	
Hamilton	Chattanooga, 783 ft.	35 04	81 15	63	80	68	70	91	4	51	27	n. w.	br.	16	10	15	5	1	1	1	4	3	9	3.40	B. L. Goulding.	
Hardeman	Bolivar, 430 ft.	35 18	82 00	68	78	66	67	90	2	50	22	n.	br.	27	1	2	3	3	3	3	3	3	3	1	1.15	E. P. McNeal.
Hardin	Savannah, 400 ft.	35 20	81 40	59	79	64	66	91	4	45	24	n. w.	1. 2	25	2	3	3	2	2	2	2	2	2	1	1.79	H. R. Hinkle.
Henry	Paris	36 33	81 25	63	76	69	69	86	2	50	21	w.	br. 5	22	11	8	11	1	1	1	1	1	1	2	0.73	J. J. Travis.
Humphreys	Waverly	36 00	80 45	57	77	71	69	86	4	42	24	n. e.	br.	13	11	6	6	6	6	6	6	6	6	3	2.00	D. R. Owen.
Knox	Knoxville, 980 ft.	35 56	81 58	68	78	68	66	92	4	47	27	n. w.	br.	10	16	4	8	8	8	8	8	8	8	9	2.53	John A. Cody.
Lincn	Howell	35 15	80 30	66	81	65	70	95	4	50	27	s.	br.	8	6	8	16	1	1	1	1	1	1	4	3.32	O. R. Hatcher, M. D.
Marion	Fostoria, 1,200 ft.	35 10	80 55	55	79	66	63	86	2	42	20	w.	br.	4	18	4	8	8	8	8	8	8	8	1	2.86	Charles Foster.
McMinn	Chickaluck	35 30	7 30	57	80	66	67	88	4	42	11	n. w.	1.	22	1	7	7	7	7	7	7	7	7	4	3.45	Jacob Zeigler.
Montgomery	Sailor's Rest	36 24	80 35	58	77	62	65	89	4	41	11	e.	br.	19	9	2	2	2	2	2	2	2	2	3	2.13	John Minor.
Overton	Livingston, 966 ft.	36 23	81 17	58	77	62	65	89	4	41	11	s. w.	br. 4	7	15	8	18	1	1	1	1	1	4	0	2.13	J. A. Laughlin.
Polk	Parksville	35 16	7 45	60	80	79	74	90	16	44	11	n.	1	5	6	9	2	2	2	2	2	2	2	6	2.86	C. F. Williamson, 20 d.
Rutherford	Florence Station	35 53	82 00	65	82	67	70	92	3	54	26	n. w.	1.	14	8	8	8	8	8	8	8	8	8	4	1.30	J. F. Vandeford.
Rhea	Grand View, 1,635 ft.	35 45	7 48	68	78	60	64	90	4	32	11	s. w.	br. 4	24	11	11	8	23	4	1	1	1	1	5	1.39	Hattie R. Stratton.
Smith	Riddleton, 548 feet.	36 19	80 07	68	78	66	67	96	15	45	11	s. w.	br. 4	16	12	6	12	21	3	1	1	1	1	4	1.86	S. P. Fergusson.
Smith	Alexandria (near)	35 30	82 56	66	80	69	69	82	3	54	9	n.	br.	5	12	13	3	3	3	3	3	3	3	4	0.74	Irene Beckwith.
Tipton	Covington	35 30	82 38	60	80	65	67	84	2	50	22	n.	br. 4	24	20	7	3	3	3	3	3	3	3	1	1.20	T. W. Roane, M. D.
Williamson	Franklin, 650 ft.	35 50	8 48	60	73	66	66	86	4	48	24	n.	br.	12	0	12	11	5	5	5	5	5	5	2	2.52	Samuel Henderson.
Warren	McMinnville, 950 ft.	35 45	8 48	60	73	64	66	86	4	49	26	n.	br.	25	10	9	11	5	5	5	5	5	5	5	3.68	R. M. Reams.

Report of the Ohio meteorological bureau. Summary for the month of September, 1883.

Number.	Stations.	Counties.	Mean barometer.	Highest barometer.	Date.	Lowest barometer.	Date.	Range of barometer.	Mean relative humidity.	Mean temperature.	Highest temperature.	Date.	Lowest temperature.	Date.	Range of temperature.	Mean daily range of temperature.	Greatest daily range of temperature.	Date.	Least daily range of temperature.	Date.	Number of clear days.	Number of fair days.	Number of cloudy days.	Days on which rain fell.	Total rainfall for month.	Average daily rainfall.	Direction of wind.
1	Cincinnati	Hamilton	30.062	30.402	9	29.767	24	.635	65.0	66.7	88.0	2	46.0	26	42.0	16.5	29.0	7.7	7.5	20	11	12	7	1.83	.061	ne.	
3	Dayton	Montgomery	30.082	30.392	9	29.683	24	.709	73.4	62.7	87.0	2	39.0	9, 10	45.0	22.1	33.0	7.27	11.3	21	11	6	5	2.38	.079	ne.	
4A	Wapakoneta	Auglaize	30.109	30.406	9	29.670	24	.790	70.7	62.0	82.5	15	31.0	9	61.0	25.8	40.0	11.12	9.0	21	11	8	7	2.70	.060	sw.	
5	Sidney	Shelby							76.8	60.5	86.5	15	25.0	9	61.5	31.5	47.5	15	11.5	17	8	11	6	9	3.09	.123	ne.
5	Upper Sandusky	Wyandot	30.083	30.420	9, 10	29.726	24	.700	73.6	61.7	87.0	15, 16	34.0	9	53.0	22.5	33.0	4, 11	8.0	21	10	10	10	12	1.44	.048	sw.
6	Wauseon	Fulton	30.033	30.390	10	29.610	24	.780	81.0	57.2	89.1	15	28.8	26	60.3	27.2	39.7	11	7.0	21	8	14	8	12	2.96	.099	ne.
7	Lebanon	Warren							76.6	65.1	86.5	15	38.0	26	52.5	23.5	36.0	27	14.0	17, 24	12	12	6	7	2.36	.079	sw.
8	N. Lewisburg	Champaign							70.1	63.1	89.0	14	36.5	9, 10	52.5	23.5	33.5	27	13.0	25	10	11	9	9	2.05	.088	w.
9A	Levering	Knox																							4.25	.142	
9B	Gambier	Knox	30.026	30.393	9	29.507	24	.826	75.2	59.4	84.0	15, 16	33.0	10	51.0	22.6	39.0	11	11.0	25	8	7	15	11	3.30	.110	
10	Toledo	Lucas	30.050	30.431	9	29.585	24	.846	70.2	60.6	82.0	2	37.0	9	45.0	16.6	24.0	4, 11	6.0	21	10	17	3	12	2.78	.093	ne.
11	Ironton	Lawrence	30.065	30.305	9	29.755	23	.854	74.7	67.6	87.0	15, 16	40.0	10	47.0	28.3	36.0	7, 26	12.0	23	12	5	13	0	3.53	.118	ne.
12A	Washington	Fayette	30.035	30.345	9	29.662	24	.683	71.5	64.3	86.6	15	37.8	10	48.8	24.9	35.7	12	13.5	21	11	11	8	14	1.89	.053	ne.
12B	Waverly	Pike							74.7	64.9	87.2	15	32.0	9	62.5	34.3	55.0	14	10.6	5	18	11	1	9	0.75	.025	w.
13A	Columbus	Franklin	30.053	30.398	9	29.664	24	.734	66.2	63.1	88.0	10	39.0	9	49.0	20.0	31.0	11	10.0	19	10	11	9	13	2.43	.081	s.
13B	O. S. University	Franklin							79.6	61.5	85.0	15	34.0	9, 26	59.0	25.6	45.0	11	9.0	17	10	12	8	11	3.13	.104	nw.
14	Westerville	Franklin	30.068	30.410	9	29.680	24	.730	82.4	66.3	86.0	10	34.0	9	52.0	24.8	39.0	11	9.0	17	9	11	10	13	2.47	.082	n.
15	Oberlin	Lorain	30.108	30.480	10	29.626	24	.854	83.6	68.2	89.5	16	31.5	10	54.0	22.4	36.7	11, 12	9.0	25				14	4.97	.160	
16	Marietta	Washington	30.092	30.415	9	29.687	24	.728	77.1	64.5	86.8	16	39.4	9	50.4	24.3	36.3	27	12.0	19	10	7	13	7	2.75	.092	nw.
17	Granville	Licking							66.4	63.0	86.0	14, 15	36.7	9	52.3	23.6	35.0	4	10.0	25	10	13	7	8	2.63	.088	nw.
17	Quaker City	Guernsey	30.071	30.385	10	29.643	24	.742	76.2	63.5	88.0	16	34.5	9	53.5	23.7	33.0	11	12.0	19, 25	11	11	8	11	2.38	.079	n.
18	Canton	Stark	30.082	30.421	9	29.630	24	.791	76.5	69.0	87.2	16	32.8	10	54.4	23.5	36.7	7	12.4	28	7	10	13	14	1.71	.057	sw.
19	Warren	Trumbull							78.0	61.4	85.3	16	31.0	10	54.3	22.4	35.3	11	11.4	25	6	13	11	14	2.72	.091	ne.
20	Wooster	Wayne	29.997	30.367	9	29.613	24	.754	77.9	68.0	89.4	15	36.0	26	57.0	24.2	38.0	18, 26	6.5	30	10	7	13	13	2.95	.098	ne.
21A	Cleveland	Cuyahoga	30.054	30.431	10	29.502	24	.869	67.1	59.5	86.7	10	38.5	10	48.2	16.7	29.8	4	6.7	25	7	13	10	17	4.03	.134	ne.
21B	Cleveland	Cuyahoga							59.0	59.0	87.0	16	36.0	10	51.0	19.2	31.5	4	9.0	25, 30	8	10	12	10	4.35	.145	ne.
	State		30.063	30.480	10	29.562	24	.918	74.6	61.5	97.2	15	25.0	9	72.2	23.4	55.0	14	6.0	21	10, 3	10, 7	9	10, 8	2.72	.093	ne.